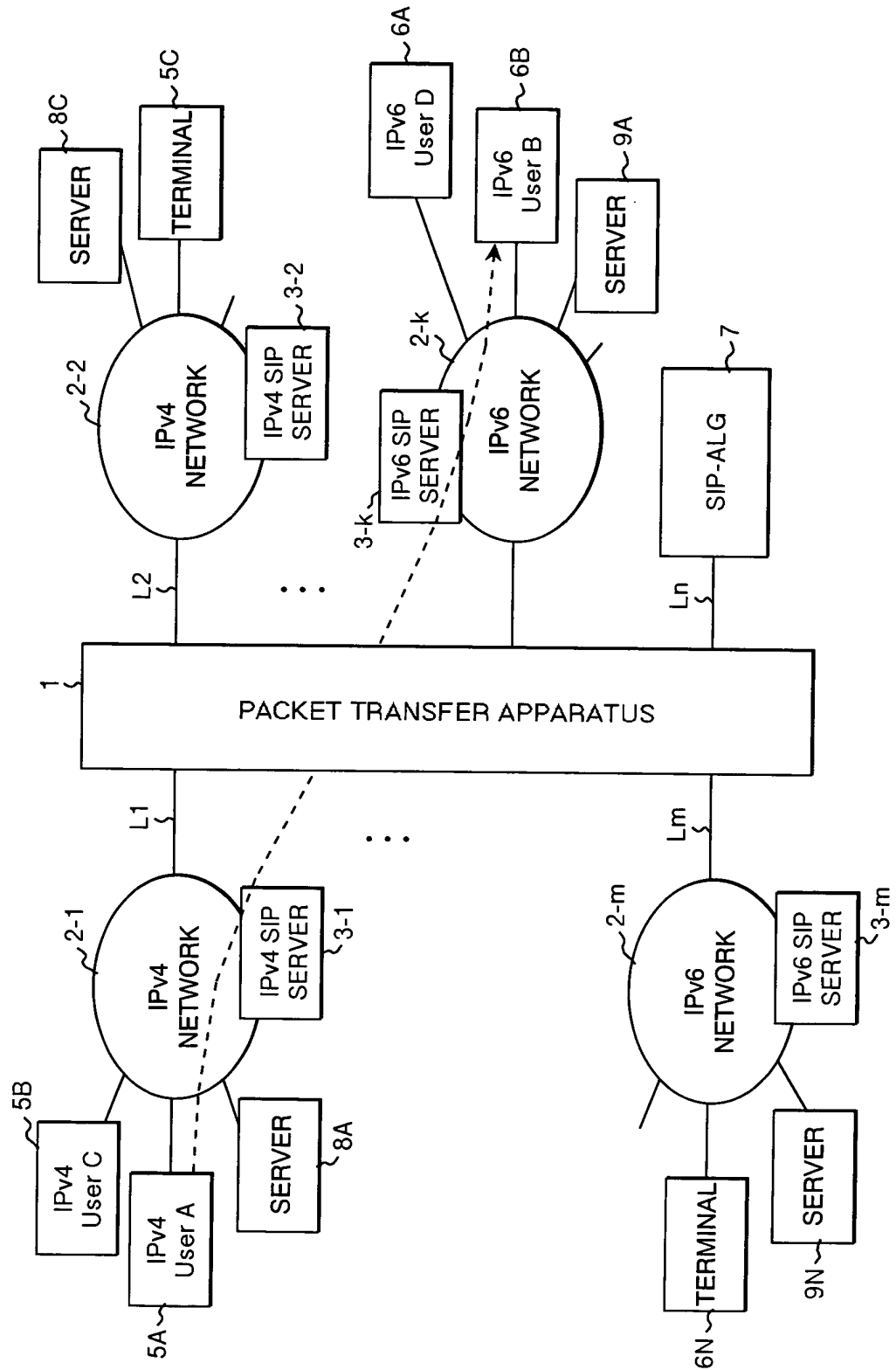


1/31

FIG. 1



2/31

FIG. 2

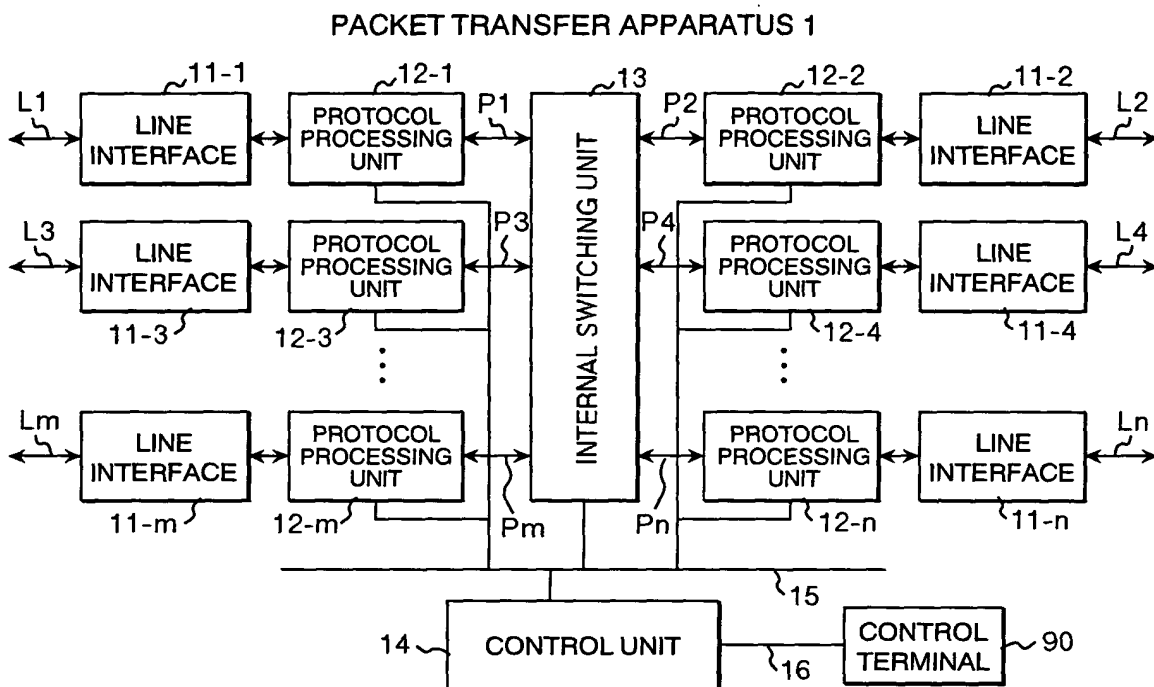
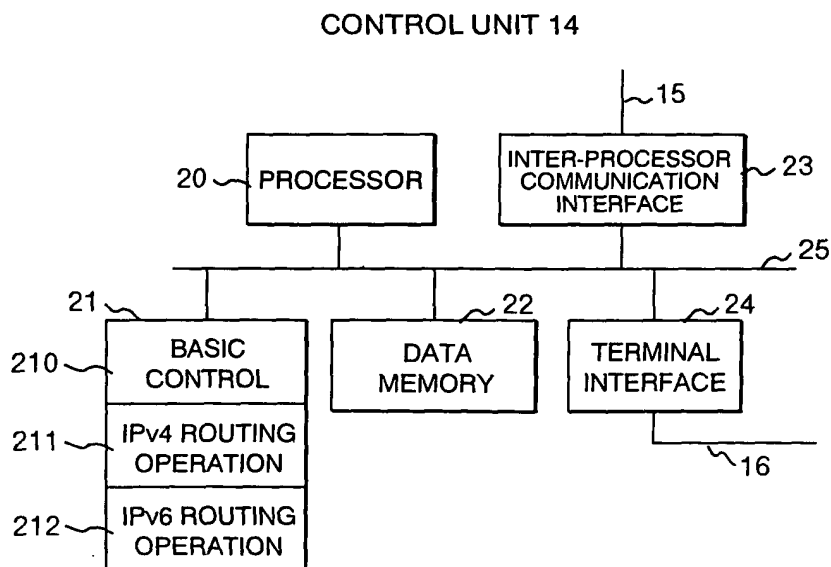


FIG. 3



3/31

FIG. 4

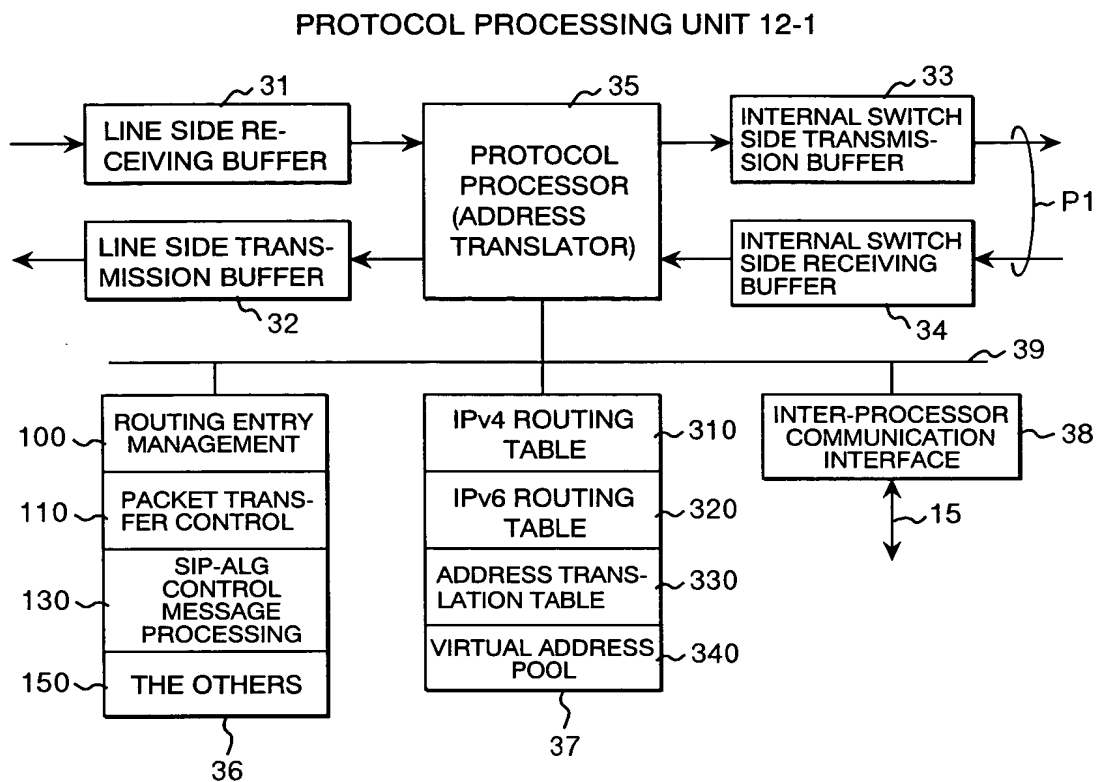
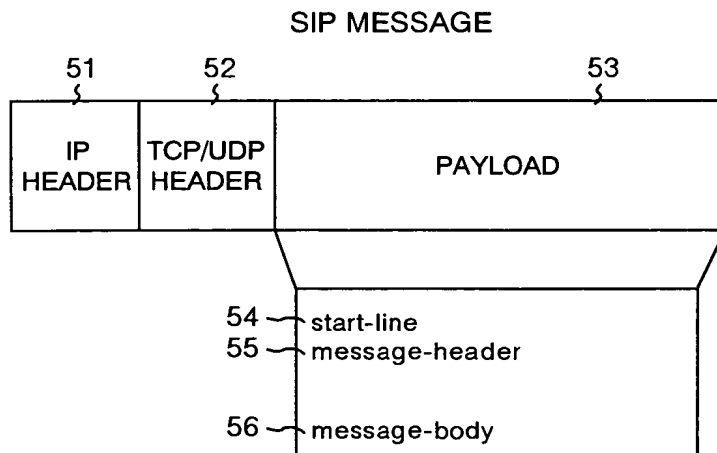


FIG. 5



4/31

FIG. 6

IPv4 PACKET HEADER

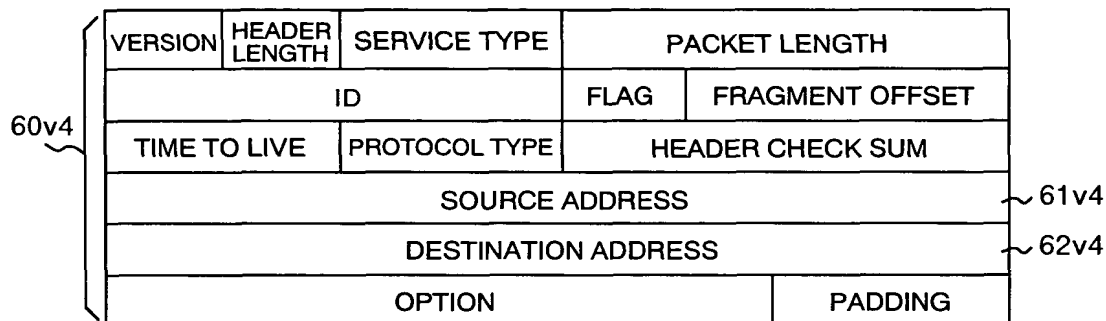
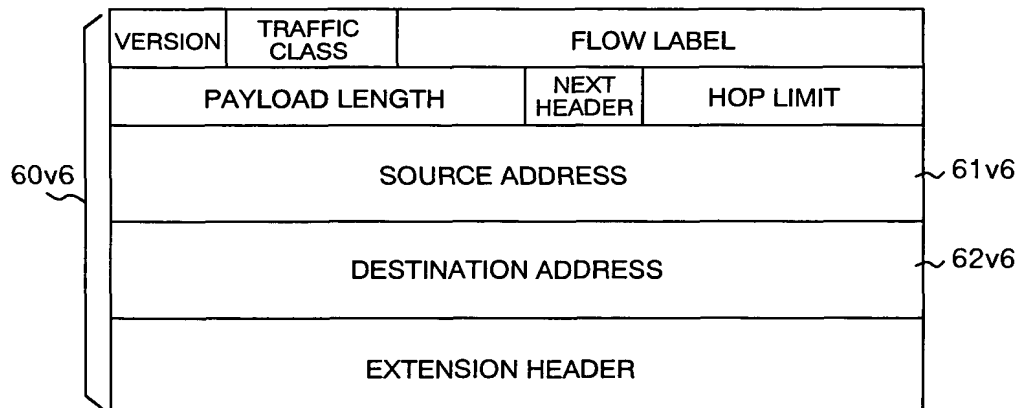


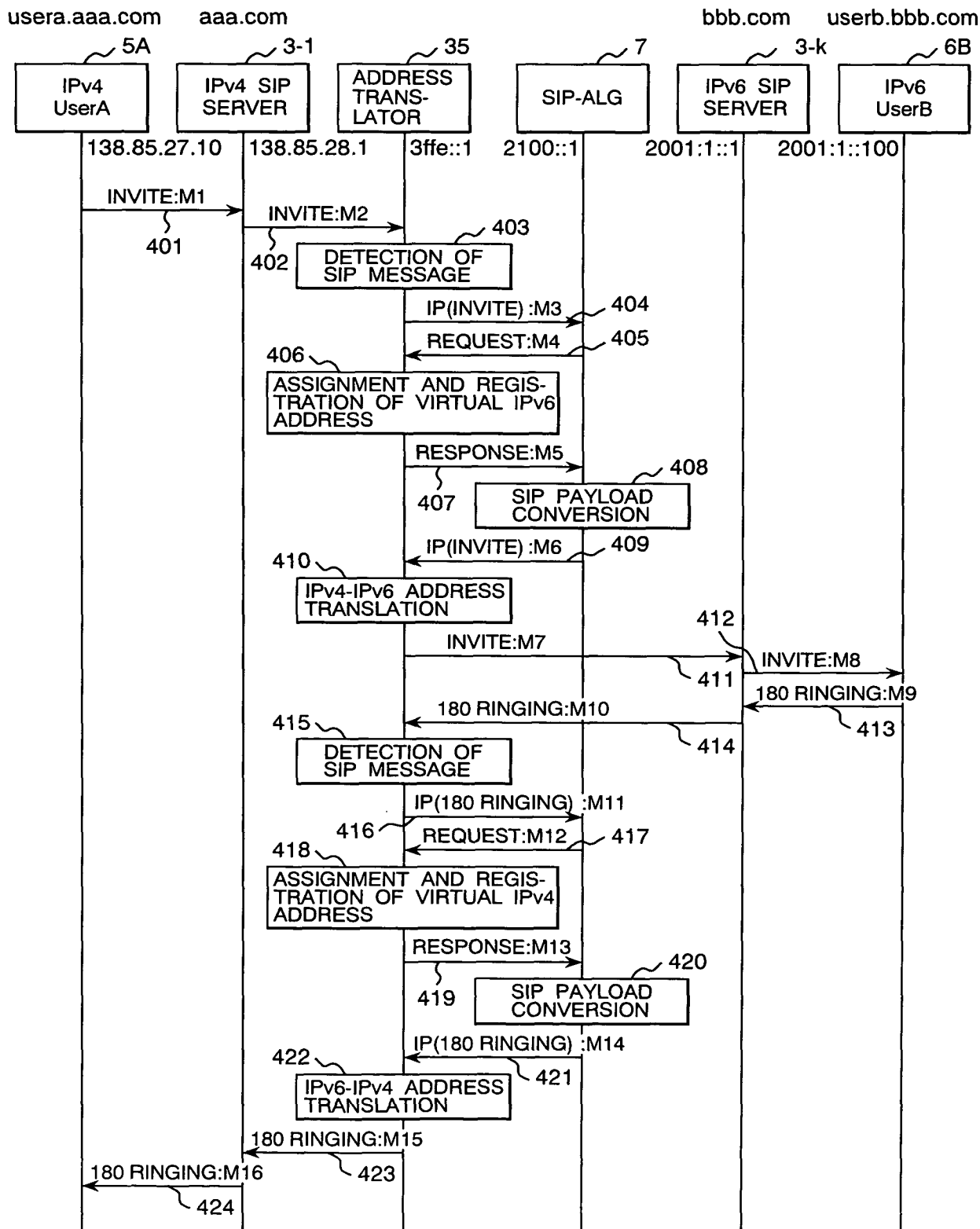
FIG. 7

IPv6 PACKET



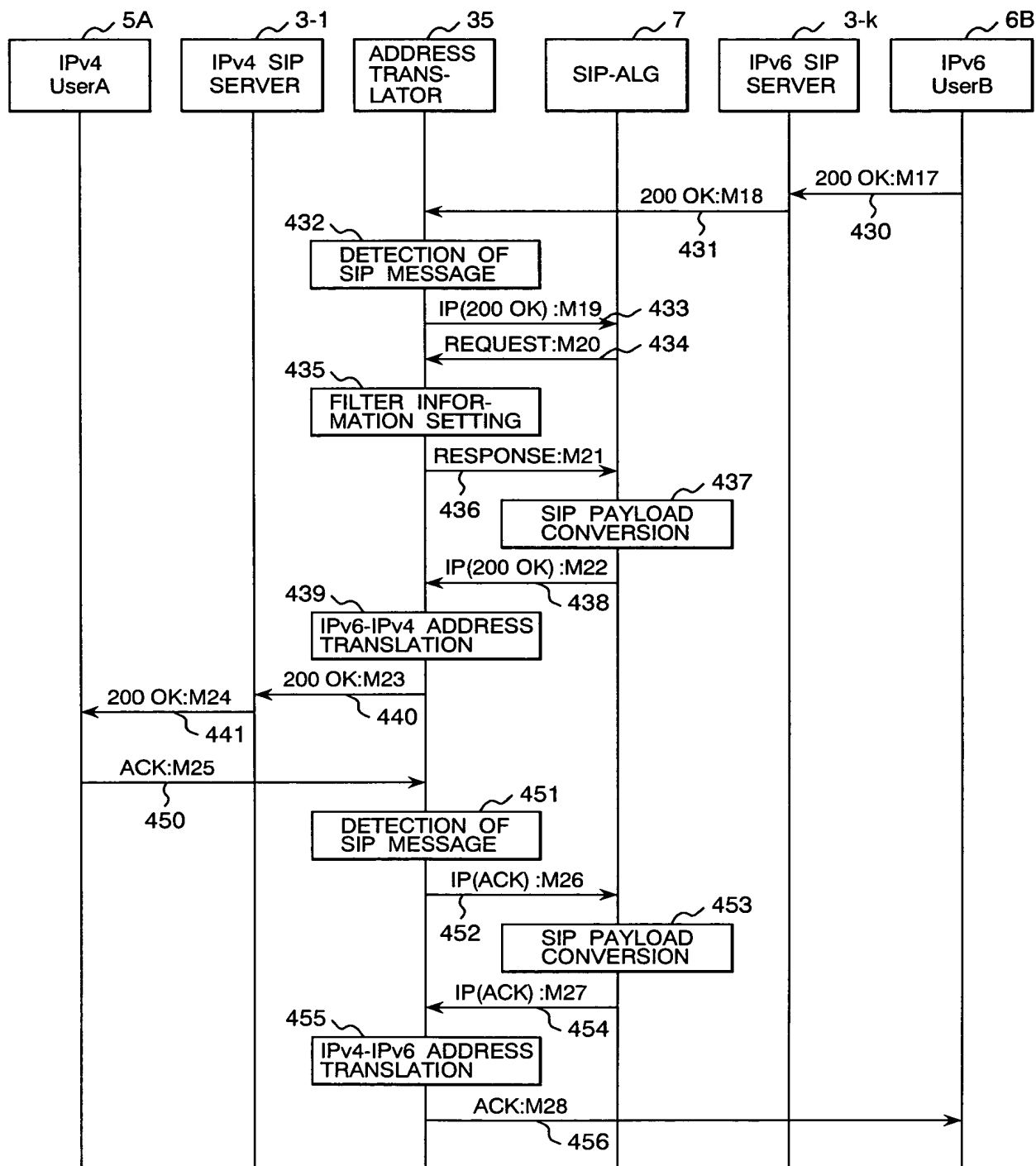
5/31

FIG. 8



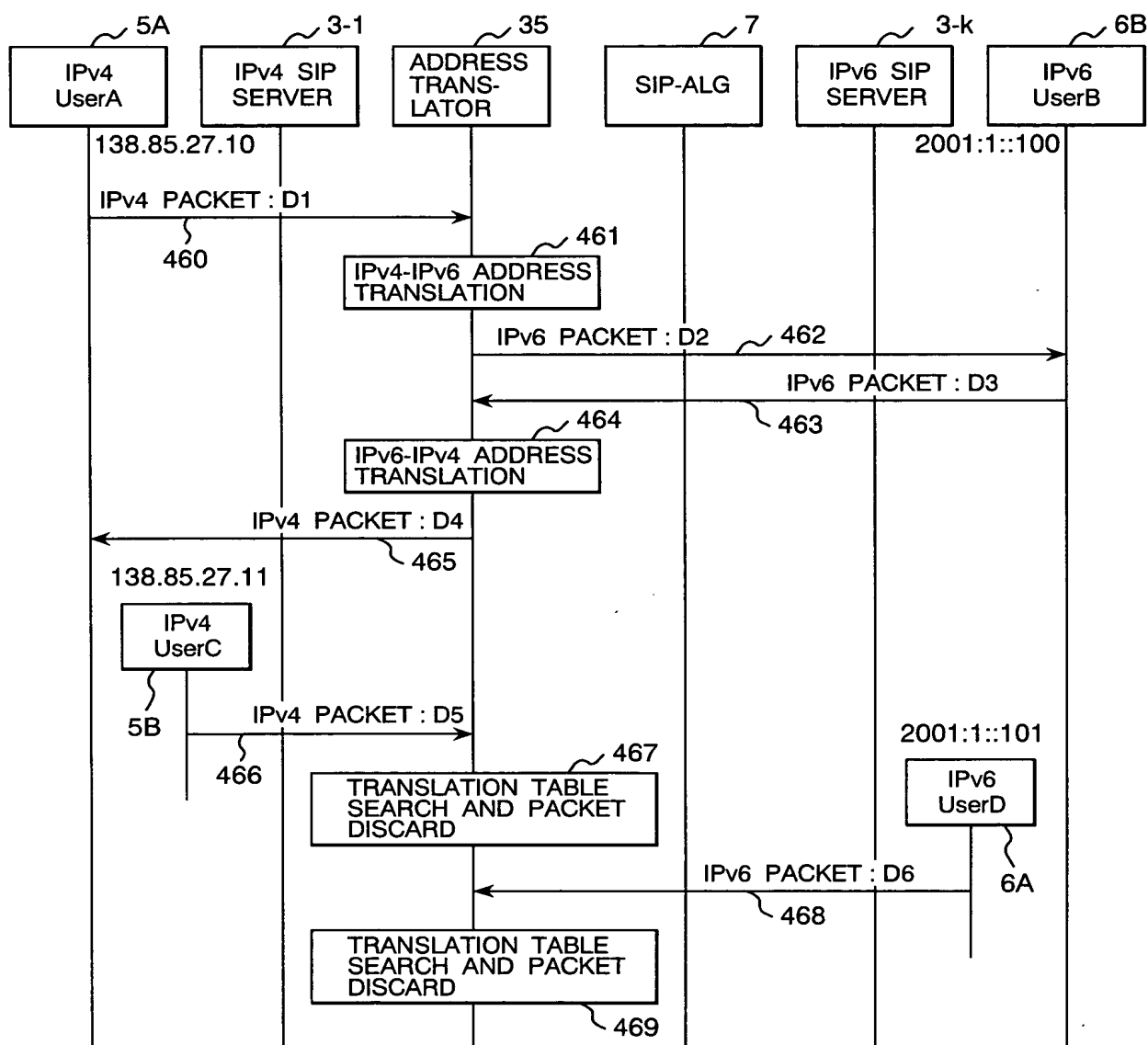
6/31

FIG. 9



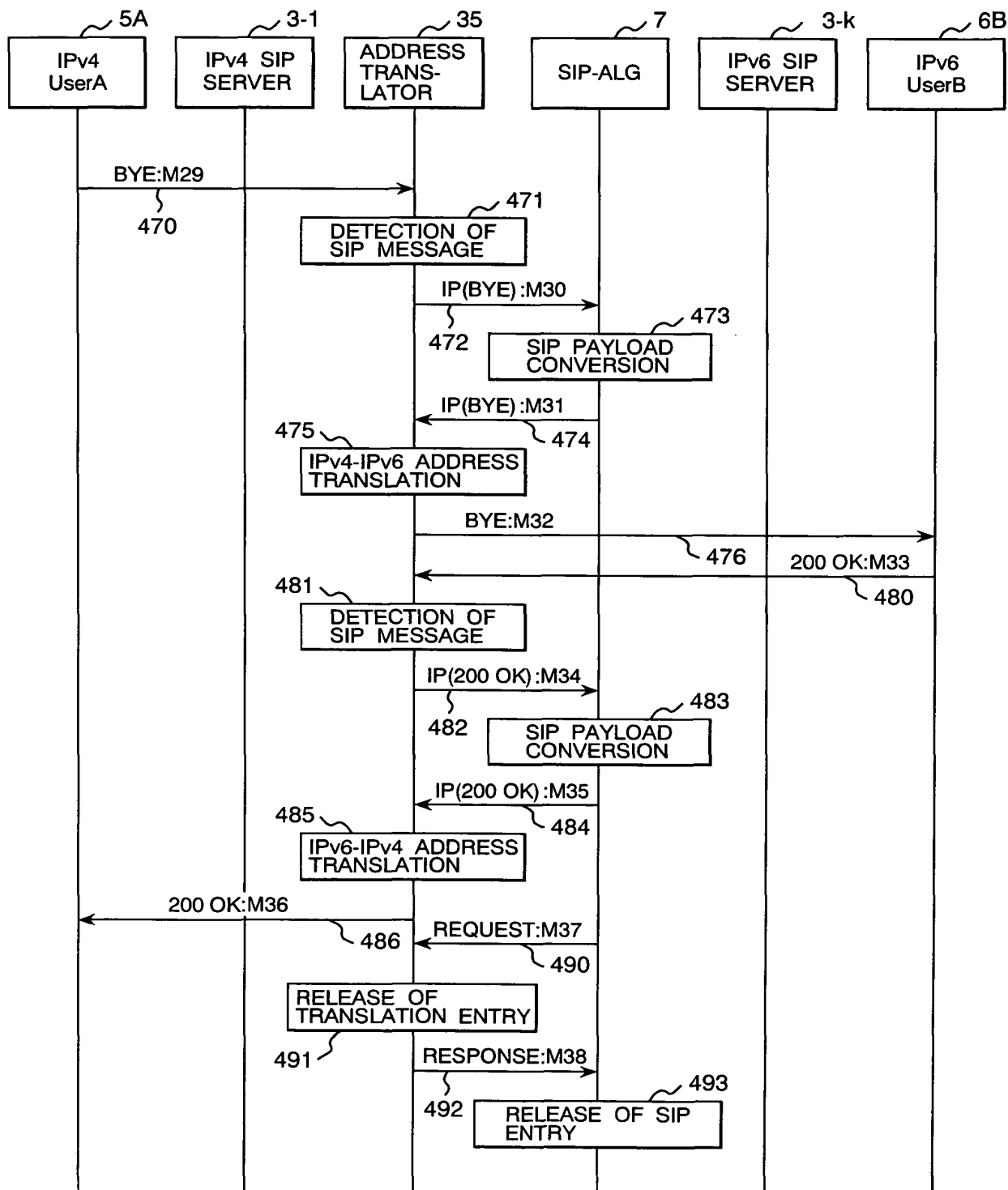
7/31

FIG. 10



8/31

FIG. 11



9/31

ADDRESS TRANSLATION TABLE 330

No.	IPv4 address	IPv6 address	Filter Information				
			Validity	Source address	Type of Port	Source port	Destination port
1	<u>138.90.0.1</u>	2001::1::1	0				EN1
2	138.85.28.1	<u>2002::8a55:1c01</u>	0				EN2
3							
4							

No.	IPv4 address	IPv6 address	Filter Information				
			Validity	Source address	Type of Port	Source port	Destination port
1	<u>138.90.0.1</u>	2001::1::1	0				EN1
2	138.85.28.1	<u>2002::8a55:1c01</u>	0				EN2
3	138.85.27.10	<u>2002::8a55:1b0a</u>	1	::0			EN3
4	<u>138.90.0.2</u>	2001::1::100	1	0.0.0.0			EN4

No.	IPv4 address	IPv6 address	Filter Information				
			Validity	Source address	Type of Port	Source port	Destination port
1	<u>138.90.0.1</u>	2001::1	0				EN1
2	138.85.28.1	<u>2002::8a55:1c01</u>	0				EN2
3	138.85.27.10	<u>2002::8a55:1b0a</u>	1	2001::1:100	UDP	Any	20002,20003
4	<u>138.90.0.2</u>	2001::1:100	1	138.85.27.10	UDP	Any	41000,41001

FIG. 12A

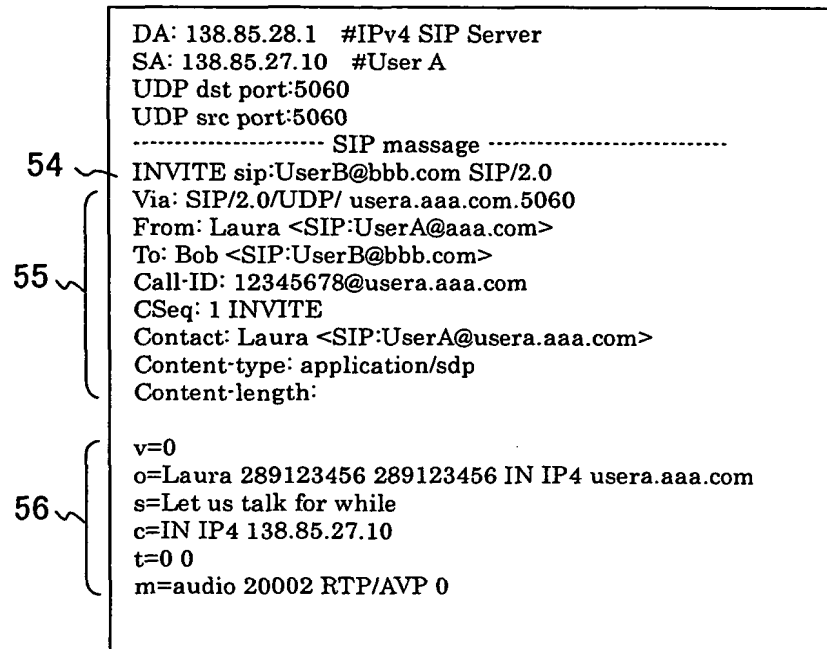
FIG. 12B

FIG. 12C

10/31

FIG. 13

INVITE PACKET M1



11/31

FIG. 14

INVITE PACKET M2

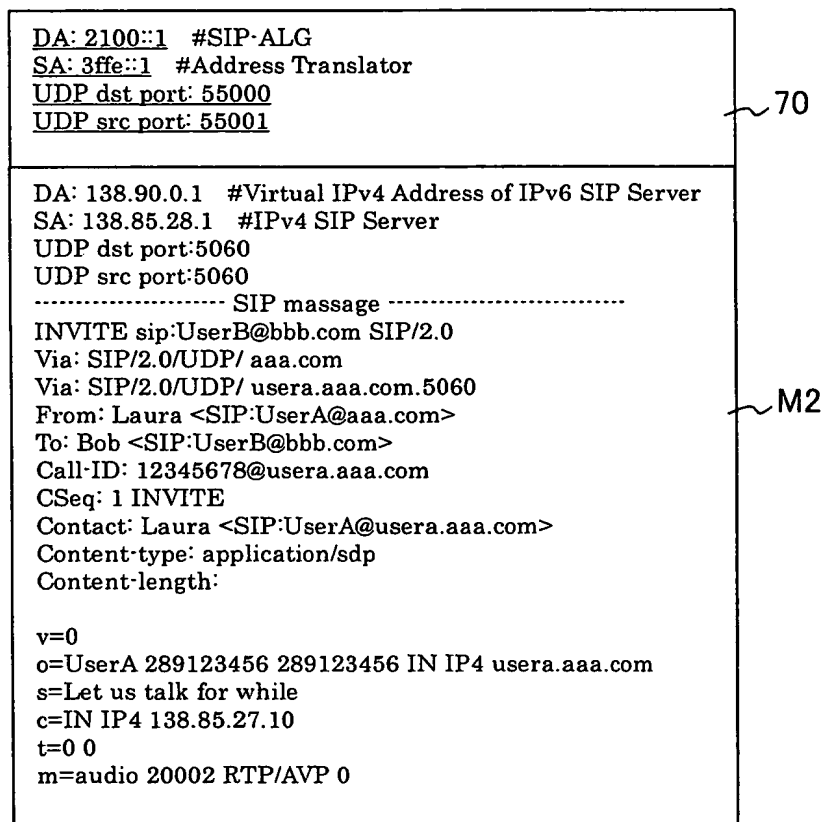
```
DA: 138.90.0.1 #Virtual IPv4 Address of IPv6 SIP Server
SA: 138.85.28.1 #IPv4 SIP Server
UDP dst port:5060
UDP src port:5060
----- SIP message -----
INVITE sip:UserB@bbb.com SIP/2.0
Via: SIP/2.0/UDP/ aaa.com
Via: SIP/2.0/UDP/ usera.aaa.com.5060
From: Laura <SIP:UserA@aaa.com>
To: Bob <SIP:UserB@bbb.com>
Call-ID: 12345678@usera.aaa.com
CSeq: 1 INVITE
Contact: Laura <SIP:UserA@usera.aaa.com>
Content-type: application/sdp
Content-length:

v=0
o=UserA 289123456 289123456 IN IP4 usera.aaa.com
s=Let us talk for while
c=IN IP4 138.85.27.10
t=0 0
m=audio 20002 RTP/AVP 0
```

12/31

FIG. 15

IP (INVITE) PACKET M3



13/31

FIG. 16

REQUEST PACKET M4

```
DA: 3ffe::1 #Address Translator
SA: 2100::1 #SIP-ALG
UDP dst port:56000
UDP src port:56001
----- USER DATA -----
message: Virtual IPv6 address request
IPv4 Address: 138.85.27.10 #IPv4 Address of User A
```

FIG. 17

RESPONSE PACKET M5

```
DA: 2100::1 #SIP-ALG
SA: 3ffe::1 #Address Translator
UDP dst port:56001
UDP src port:56000
----- USER DATA -----
message: virtual ipv6 address response
result: OK
Virtual IPv6 Address: 2002::8a55:1b0a #User A
```

14/31

FIG. 18

IP (INVITE) PACKET M6

DA: 3ffe::1
SA: 2100::1
UDP dst port: 55001
UDP src port: 55000

DA: 138.90.0.1 #Virtual IPv4 Address of IPv6 SIP Server
SA: 138.85.28.1 #IPv4 SIP Server
UDP dst port:5060
UDP src port:5060

----- SIP message -----
INVITE sip:UserB@bbb.com SIP/2.0
Via: SIP/2.0/UDP/ aaa.com
Via: SIP/2.0/UDP/ usera.aaa.com.5060
From: Laura <SIP:UserA@aaa.com>
To: Bob <SIP:UserB@bbb.com>
Call-ID: 12345678@usera.aaa.com
CSeq: 1 INVITE
Contact: Laura <SIP:UserA@usera.aaa.com>
Content-type: application/sdp
Content-length:

v=0
o=UserA 289123456 289123456 IN IP4 usera.aaa.com
s=Let us talk for while
c=IN IP6 2002::8a55:1b0a #Virtual IPv6 Address of User A
t=0 0
m=audio 20002 RTP/AVP 0

15/31

FIG. 19

INVITE PACKET M7

```
DA: 2001:1::1 #IPv6 SIP Server
SA: 2002::8a55:1c01 #Virtual IPv6 Address of IPv4 SIP
Server
UDP dst port:5060
UDP src port:5060
----- SIP message -----
INVITE sip:UserB@bbb.com SIP/2.0
Via: SIP/2.0/UDP/ aaa.com
Via: SIP/2.0/UDP/ usera.aaa.com:5060
From: Laura <SIP:UserA@aaa.com>
To: Bob <SIP:UserB@bbb.com>
Call-ID: 12345678@usera.aaa.com
CSeq: 1 INVITE
Contact: Laura <SIP:UserA@usera.aaa.com>
Content-type: application/sdp
Content-length:

v=0
o=UserA 289123456 289123456 IN IP4 usera.aaa.com
s=Let us talk for while
c=IN IP6 2002::8a55:1b0a #Virtual IPv6 Address of User A
t=0 0
m=audio 20002 RTP/AVP 0
```

16/31

FIG. 20

INVITE PACKET M8

```
DA: 2001:1::100 #User B
SA: 2001:1::1 #IPv6 SIP Server
UDP dst port:5060
UDP src port:5060
----- SIP message -----
INVITE sip:UserB@2001:1::100 SIP/2.0
Via: SIP/2.0/UDP/ bbb.com
Via: SIP/2.0/UDP/ aaa.com
Via: SIP/2.0/UDP/ usera.aaa.com.5060
From: Laura <SIP:UserA@aaa.com>
To: Bob <SIP:UserB@bbb.com>
Call-ID: 12345678@usera.aaa.com
CSeq: 1 INVITE
Contact: Laura <SIP:UserA@usera.aaa.com>
Content-type: application/sdp
Content-length:

v=0
o=UserA 289123456 289123456 IN IP4 usera.aaa.com
s=Let us talk for while
c=IN IP6 2002::8a55:1b0a #Virtual IPv6 Address of User A
t=0 0
m=audio 20002 RTP/AVP 0
```

FIG. 21

180 RINGING PACKET M9

```
DA: 2001:1::1 #IPv6 SIP Server
SA: 2001:1::100 #User B
UDP dst port:5060
UDP src port:5060
----- SIP message -----
SIP/2.0 180 Ringing
Via: SIP/2.0/UDP/ bbb.com
Via: SIP/2.0/UDP/ aaa.com
Via: SIP/2.0/UDP/ usera.aaa.com.5060
From: Laura <SIP:UserA@aaa.com>
To: Bob <SIP:UserB@bbb.com>
Call-ID: 12345678@usera.aaa.com
CSeq: 1 INVITE
Contact: Bob <SIP:UserB@2001:1::100>
```


17/31

FIG. 22

180 RINGING PACKET M10

```
DA: 2002::8a55:1c01 #Virtual IPv6 Address of IPv4 SIP
                        Server
SA: 2001:1::1 #IPv6 SIP Server
UDP dst port:5060
UDP src port:5060
----- SIP message -----
SIP/2.0 180 Ringing
Via: SIP/2.0/UDP/ aaa.com
Via: SIP/2.0/UDP/ usera.aaa.com.5060
From: Laura <SIP:UserA@aaa.com>
To: Bob <SIP:UserB@bbb.com>
Call-ID: 12345678@usera.aaa.com
CSeq: 1 INVITE
Contact: Bob <SIP:UserB@2001:1::100>
```

FIG. 23

REQUEST PACKET M12

```
DA: 3ffe::1 #Address Translator
SA: 2100::1 #SIP-ALG
UDP dst port:56000
UDP src port:56001
----- USER DATA -----
message: Virtual IPv4 address request
IPv6 Address: 2001:1::100 #IPv6 Address of User B
```

18/31

FIG. 24

RESPONSE PACKET M13

```
DA: 2100::1 #SIP-ALG
SA: 3ffe::1 #Address Translator
UDP dst port: 56001
UDP src port: 56000
----- USER DATA -----
message: Virtual IPv4 address response
result: OK
Virtual IPv4 Address: 138.90.0.2 # User B
```

FIG. 25

IP (180 RINGING) PACKET M14

```
DA: 3ffe::1
SA: 2100::1
UDP dst port: 55001
UDP src port: 55000

DA: 2002::8a55:1c01 #Virtual IPv6 Address of IPv4 SIP
                    Server
SA: 2001:1::1 #IPv6 SIP Server
UDP dst port: 5060
UDP src port: 5060
----- SIP message -----
SIP/2.0 180 Ringing
Via: SIP/2.0/UDP/ aaa.com
Via: SIP/2.0/UDP/ usera.aaa.com.5060
From: Laura <SIP:UserA@aaa.com>
To: Bob <SIP:UserB@bbb.com>
Call-ID: 12345678@usera.aaa.com
CSeq: 1 INVITE
Contact: Bob <SIP:UserB@138.90.0.2>
```

19/31

FIG. 26

180 RINGING PACKET M15

```
DA: 138.85.28.1 #IPv4 SIP Server
SA: 138.90.0.1 #Virtual IPv4 Address of IPv6 SIP Server
UDP dst port:5060
UDP src port:5060
----- SIP message -----
SIP/2.0 180 Ringing
Via: SIP/2.0/UDP/ aaa.com
Via: SIP/2.0/UDP/ usera.aaa.com:5060
From: Laura <SIP:UserA@aaa.com>
To: Bob <SIP:UserB@bbb.com>
Call-ID: 12345678@usera.aaa.com
CSeq: 1 INVITE
Contact: Bob <SIP:UserB@138.90.0.2>
```

FIG. 27

180 RINGING PACKET M16

```
DA: 138.85.27.10 #User A
SA: 138.85.28.1 #IPv4 SIP Server
UDP dst port:5060
UDP src port:5060
----- SIP message -----
SIP/2.0 180 Ringing
Via: SIP/2.0/UDP/ usera.aaa.com:5060
From: Laura <SIP:UserA@aaa.com>
To: Bob <SIP:UserB@bbb.com>
Call-ID: 12345678@usera.aaa.com
CSeq: 1 INVITE
Contact: Bob <SIP:UserB@138.90.0.2>
```

20/31

FIG. 28

200 OK PACKET M17

```
DA: 2001:1::1 #IPv6 SIP Server
SA: 2001:1::100 #User B
UDP dst port:5060
UDP src port:5060
----- SIP message -----
SIP/2.0 200 OK
Via: SIP/2.0/UDP/ bbb.com
Via: SIP/2.0/UDP/ aaa.com
Via: SIP/2.0/UDP/ usera.aaa.com:5060
From: Laura <SIP:UserA@aaa.com>
To: Bob <SIP:UserB@bbb.com>
Call-ID: 12345678@usera.aaa.com
CSeq: 1 INVITE
Contact: Bob <SIP:UserB@2001:1::100>
Content-type: application/sdp
Content-length:

v=0
o=2891234321 2891234321 IN IN6 2001:1::100
s=Let us talk for a while
c=IN IN6 2001:1::100
t=0 0
m=audio 41000 RTP/AVP 0
```

FIG. 29

REQUEST PACKET M20

```
DA: 3ffe::1 #Address Translator
SA: 2100::1 #SIP-ALG
UDP dst port:56000
UDP src port:56001
----- USER DATA -----
message: filter request
Filter Information
Virtual IPv6 address: 2002::8a55:1b0a
  IPv6 src address: 2001:1::100, UDP src port: any,
  UDP dst port: 20002,20003
Virtual IPv4 address: 138.90.0.2
  IPv4 src address: 138.85.27.10, UDP src port: any,
  UDP dst port: 41000,41001
```

21/31

FIG. 30

RESPONSE PACKET M21

```
DA: 2100::1 #SIP-ALG
SA: 3ffe::1 #Address Translator
UDP dst port:56001
UDP src port:56000
----- USER DATA -----
message: filter response
result: OK
```

FIG. 31

IP (200 OK) PACKET M22

```
DA: 3ffe::1
SA: 2100::1
UDP dst port: 55001
UDP src port: 55000

DA: 2002::8a55:1c01 #Virtual IPv6 Address of IPv4 SIP
                    Server
SA: 2001:1::1 #IPv6 SIP Server
UDP dst port:5060
UDP src port:5060
----- SIP message -----
SIP/2.0 200 OK
Via: SIP/2.0/UDP/ aaa.com
Via: SIP/2.0/UDP/ usera.aaa.com:5060
From: Laura <SIP:UserA@aaa.com>
To: Bob <SIP:UserB@bbb.com>
Call-ID: 12345678@usera.aaa.com
CSeq: 1 INVITE
Contact: Bob <SIP:UserB@138.90.0.2>
Content-type: application/sdp
Content-length:

v=0
o=2891234321 2891234321 IN IN4 138.90.0.2
s=Let us talk for a while
c=IN IN4 138.90.0.2
t=0 0
m=audio 41000 RTP/AVP 0
```

22/31

FIG. 32

200 OK PACKET M23

```
DA: 138.85.28.1 #IPv4 SIP Server
SA: 138.90.0.1 #Virtual IPv4 Address of IPv6 SIP Server
UDP dst port:5060
UDP src port:5060
----- SIP message -----
SIP/2.0 200 OK
Via: SIP/2.0/UDP/ aaa.com
Via: SIP/2.0/UDP/ usera.aaa.com:5060
From: Laura <SIP:UserA@aaa.com>
To: Bob <SIP:UserB@bbb.com>
Call-ID: 12345678@usera.aaa.com
CSeq: 1 INVITE
Contact: Bob <SIP:UserB@138.90.0.2>
Content-type: application/sdp
Content-length:

v=0
o=2891234321 2891234321 IN IN4 138.90.0.2
s=Let us talk for a while
c=IN IN4 138.90.0.2
t=0 0
m=audio 41000 RTP/AVP 0
```

FIG. 33

ACK PACKET M25

```
DA: 138.90.0.2 #User B
SA: 138.85.27.10 #User A
UDP dst port:5060
UDP src port:5060
----- SIP message -----
ACK SIP:UserB@138.90.0.2 SIP/2.0
Via: SIP/2.0/UDP/ usera.aaa.com:5060
From: Laura <SIP:UserA@aaa.com>
To: Bob <SIP:UserB@bbb.com>
Call-ID: 12345678@usera.aaa.com
CSeq: 1 ACK
Contact: Laura <SIP:UserA@usera.aaa.com>
```

FIG. 34

IP (ACK) PACKET M27

DA: 3ffe::1
SA: 2100::1
UDP dst port: 55001
UDP src port: 55000

DA: 138.90.0.2 #User B
SA: 138.85.27.10 #User A
UDP dst port: 5060
UDP src port: 5060
----- SIP message -----
ACK SIP:UserB@2001:1::100 SIP/2.0
Via: SIP/2.0/UDP/ usera.aaa.com:5060
From: Laura <SIP:UserA@aaa.com>
To: Bob <SIP:UserB@bbb.com>
Call-ID: 12345678@usera.aaa.com
CSeq: 1 ACK
Contact: Laura <SIP:UserA@usera.aaa.com>

FIG. 35

ACK PACKET M28

DA: 2001:1::100 #User B
SA: 2002::8a55:1b0a #Virtual IPv6 Address of User A
UDP dst port: 5060
UDP src port: 5060
----- SIP message -----
ACK SIP:UserB@2001:1::100 SIP/2.0
Via: SIP/2.0/UDP/ usera.aaa.com:5060
From: Laura <SIP:UserA@aaa.com>
To: Bob <SIP:UserB@bbb.com>
Call-ID: 12345678@usera.aaa.com
CSeq: 1 ACK
Contact: Laura <SIP:UserA@usera.aaa.com>

Applicant: Akihito TSUZUKI, *et al.*

Title: IP Address Translator and Packet Transfer Apparatus

Atty Dock t No. 16869N-090000US

Sheet 24 of 31

24/31

FIG. 36

IPv4 PACKET D1

DA: 138.90.0.2 #Virtual IPv4 Address of User B
SA: 138.85.27.10 #User A
UDP dst port: 41000
UDP src port: 31000
----- RTP data-----

FIG. 37

IPv6 PACKET D2

DA: 2001:1::100 #User B
SA: 2002::8a55:1b0a #Virtual IPv6 Address of User A
UDP dst port: 41000
UDP src port: 31000
----- RTP data-----

FIG. 38

IPv6 PACKET D3

DA: 2002::8a55:1b0a #Virtual IPv6 Address of User A
SA: 2001:1::100 #User B
UDP dst port: 20002
UDP src port: 32000
----- RTP data-----

FIG. 39

IPv4 PACKET D4

DA: 138.85.27.10 #User A
SA: 138.90.0.2 #Virtual IPv4 Address of User B
UDP dst port: 20002
UDP src port: 32000
----- RTP data-----

FIG. 40

IPv4 PACKET D5

DA: 138.90.0.2 #Virtual IPv4 Address of User B
SA: 138.85.27.11 #User C
UDP dst port: 41002
UDP src port: 31000

FIG. 41

IPv6 PACKET D6

DA: 2001:1::101 #User D
SA: 2002::8a55:1b0a #Virtual IPv6 Address of User A
UDP dst port: 20000
UDP src port: 31000

26/31

FIG. 42

BYE PACKET M29

```
DA: 138.90.0.2 #Virtual IPv4 Address of User B
SA: 138.85.27.10 #User A
UDP dst port:5060
UDP src port:5060
----- SIP message -----
BYE SIP:UserB@138.90.0.2 SIP/2.0
Via: SIP/2.0/UDP/ usera.aaa.com:5060
From: Laura <SIP:UserA@aaa.com>
To: Bob <SIP:UserB@bbb.com>
Call-ID: 12345678@usera.aaa.com
CSeq: 2 BYE
Contact: Laura <SIP:UserA@usera.aaa.com>
```

FIG. 43

IP (BYE) PACKET M31

```
DA: 3ffe::1
SA: 2100::1
UDP dst port: 55001
UDP src port: 55000

DA: 138.90.0.2 #User B
SA: 138.85.27.10 #User A
UDP dst port:5060
UDP src port:5060
----- SIP message -----
BYE SIP:UserB@2001:1::100 SIP/2.0
Via: SIP/2.0/UDP/ usera.aaa.com:5060
From: Laura <SIP:UserA@aaa.com>
To: Bob <SIP:UserB@bbb.com>
Call-ID: 12345678@usera.aaa.com
CSeq: 2 BYE
Contact: Laura <SIP:UserA@usera.aaa.com>
```

27/31

FIG. 44

BYE PACKET M32

```
DA: 2001:1::100 #User B
SA: 2002::8a55:1b0a #Virtual IPv6 Address of User A
UDP dst port:5060
UDP src port:5060
----- SIP message -----
BYE SIP:UserB@2001:1::100 SIP/2.0
Via: SIP/2.0/UDP/ usera.aaa.com:5060
From: Laura <SIP:UserA@aaa.com>
To: Bob <SIP:UserB@bbb.com>
Call-ID: 12345678@usera.aaa.com
CSeq: 2 BYE
Contact: Laura <SIP:UserA@usera.aaa.com>
```

FIG. 45

200 OK PACKET M33

```
DA: 2002::8a55:1b0a #Virtual IPv6 Address of User A
SA: 2001:1::100 #User B
UDP dst port:5060
UDP src port:5060
----- SIP message -----
SIP/2.0 200 OK
Via: SIP/2.0/UDP/ usera.aaa.com:5060
From: Laura <SIP:UserA@aaa.com>
To: Bob <SIP:UserB@bbb.com>
Call-ID: 12345678@usera.aaa.com
CSeq: 2 BYE
Contact: Bob <SIP:UserB@2001:1::100>
```

28/31

FIG. 46

IP (200 OK) PACKET M35

```
DA: 3ffe::1  
SA: 2100::1  
UDP dst port: 55001  
UDP src port: 55000  
  
DA: 2002::8a55:1b0a #Virtual IPv6 Address of User A  
SA: 2001:1::100 #User B  
UDP dst port:5060  
UDP src port:5060  
----- SIP message -----  
SIP/2.0 200 OK  
Via: SIP/2.0/UDP/ usera.aaa.com:5060  
From: Laura <SIP:UserA@aaa.com>  
To: Bob <SIP:UserB@bbb.com>  
Call-ID: 12345678@usera.aaa.com  
CSeq: 2 BYE  
Contact: Bob <SIP:UserB@138.90.0..2>
```

FIG. 47

200 OK PACKET M36

```
DA: 138.85.27.10 #User A  
SA: 138.90.0.2 #Virtual IPv4 Address of User B  
UDP dst port:5060  
UDP src port:5060  
----- SIP message -----  
SIP/2.0 200 OK  
Via: SIP/2.0/UDP/ usera.aaa.com:5060  
From: Laura <SIP:UserA@aaa.com>  
To: Bob <SIP:UserB@bbb.com>  
Call-ID: 12345678@usera.aaa.com  
CSeq: 2 BYE  
Contact: Bob <SIP:UserB@138.90.0..2>
```

FIG. 48

REQUEST PACKET M37

```
DA: 3ffe::1 #Address Translator
SA: 2100::1 #SIP-ALG
UDP dst port:56000
UDP src port:56001
----- USER DATA -----
message: virtual address free request
Virtual IPv6 Address: 2002::8a55:1b0a
Virtual IPv4 Address: 138.90.0.2
```

FIG. 49

RESPONSE PACKET M38

```
DA: 2100::1 #SIP-ALG
SA: 3ffe::1 #Address Translator
UDP dst port:56001
UDP src port:56000
----- USER DATA -----
message: virtual address free response
result: OK
```

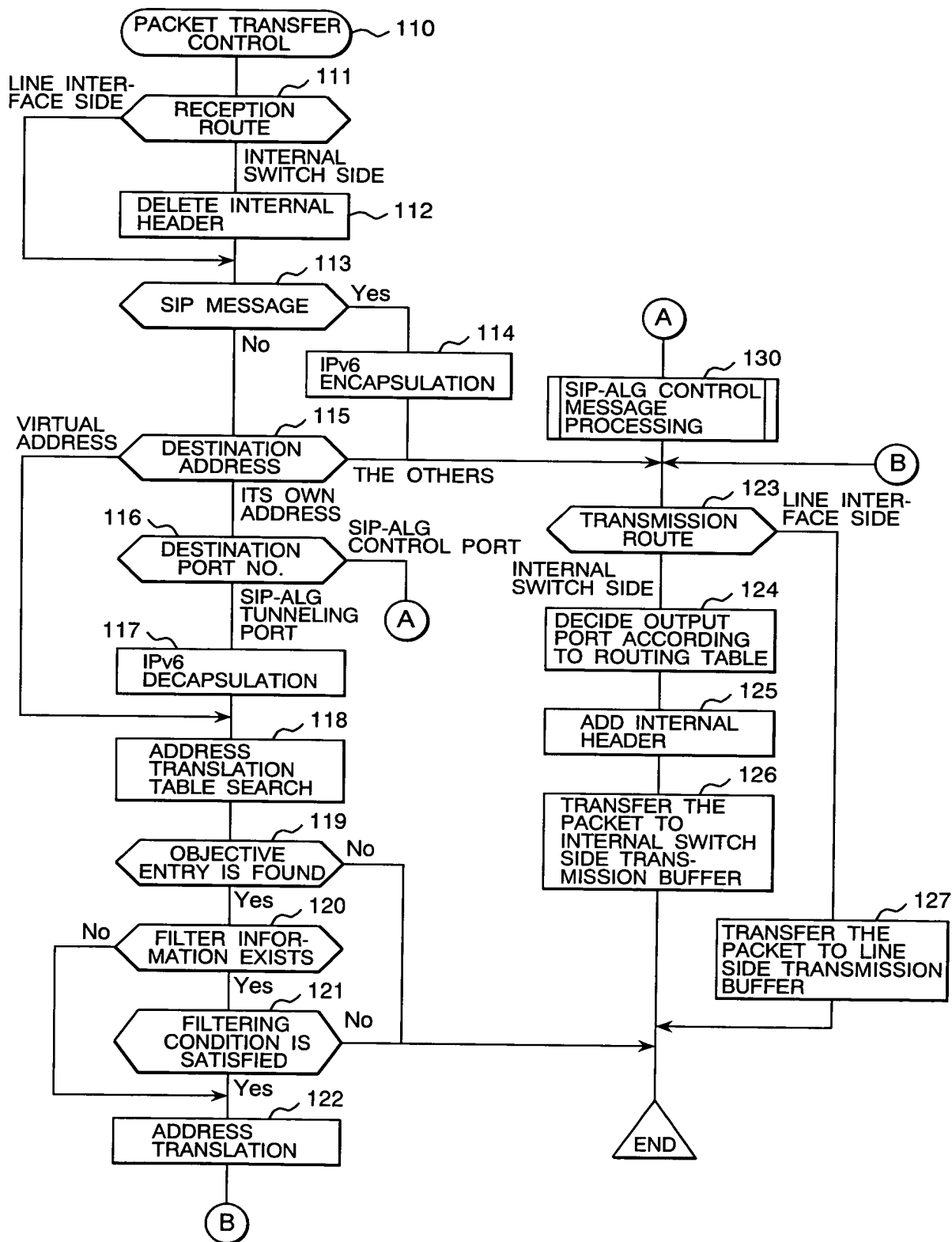


FIG. 51

